***Marked up Version of Amended Claims***

88 (Amended). An optical disk apparatus according to claim 159, [comprising:] wherein

[rotating means for rotating an information medium which has a first thickness T1 or a second thickness T2 larger than the first thickness T1;]

[an] the optical head apparatus [having an] is configured, through the compound objective lens, to read [for reading] an information signal, a focus error signal and a tracking error signal from the [information medium] optical disk rotated by the rotating [means] apparatus [through the objective lens];

[moving means for moving the optical head apparatus;]

the optical disk apparatus further comprising:

connecting means for connecting the rotating [means] apparatus and the moving [means] apparatus with an electric source to supply an electric power to the rotating [means] apparatus and the moving [means] apparatus;

actuating means for actuating the compound objective lens of the optical head apparatus;

focus control means for controlling the actuating means to perform a first focus control of the optical head apparatus corresponding to the [first] thickness T1 of the first information medium and a second focus control of the optical head apparatus corresponding to the [second] thickness T2 of the second information medium according to the focus error signal read by the optical head apparatus;

tracking control means for controlling the actuating means to perform a first tracking control of the optical head apparatus corresponding to the [first] thickness T1 of the first information medium and a second tracking control of the optical head apparatus corresponding to the [second] thickness T2 of the second information medium according to the tracking error signal read by the optical head apparatus;

detecting means for detecting whether the [information medium] optical disk has the first information medium having the thickness T1 or the second information medium having the thickness T2; and

changing means for switching from the second focus and tracking controls performed by the focus control means and the tracking control means to the first focus and tracking controls performed by the focus control means and the tracking control means according to the detection of the detecting means.

92 (Amended). An optical disk apparatus according to claim 159, [comprising:

rotating means for rotating an information medium which has a first thickness T1 or a second thickness T2 larger than the first thickness T1;]

[an] in which the optical head apparatus is configured, through [having an objective lens for converging a beam of incident light at a plurality of focal points and reading] the compound objective lens, to read an information signal, a focus error signal and a tracking error signal from the [information medium] optical disk rotated by the rotating [means] apparatus;

the optical disk apparatus further comprising:

[moving means for moving the optical head apparatus;]

connecting means for connecting the rotating [means] apparatus and the moving [means] apparatus with an electric source to supply an electric power to the rotating [means] apparatus and the moving [means] apparatus;

actuating means for actuating the compound objective lens of the optical head apparatus;

focus control means for controlling the actuating means to perform a first focus control of the optical head apparatus corresponding to the [first] thickness T1 of the first information medium and a second focus control of the optical head apparatus corresponding to the [second] thickness T2 of the

second information medium according to the focus error signal read by the optical head apparatus; and

tracking control means for controlling the actuating means to perform a first tracking control of the optical head apparatus corresponding to the [first] thickness T1 of the first information medium and a second tracking control of the optical head apparatus corresponding to the [second] thickness T2 of the second information medium according to the tracking error signal read by the optical head apparatus.

93 (Amended). An optical disk apparatus according to claim 92 in which the compound objective lens of the optical head apparatus is moved in a direction to the [information medium] optical disk by the moving [means] apparatus, and the compound objective lens of the optical head apparatus is operated to focus the light beam [is focused] on the first or second information medium by the actuating means under the control of the focus control means to decrease an intensity of the focus error signal to zero in case where the intensity of the focus error signal exceeds a threshold.

113 (Amended). An optical head apparatus according to claim 156, comprising:

[a light source for radiating a beam of incident light;

a first optical disk having a transparent substrate of a first thickness T1 and an information recording plane;

a second optical disk having a transparent substrate of a second thickness T2 lower than the first thickness T1(T2<T1) and an information recording plane;

an objective lens, partitioned into a plurality of light passing regions including a first light passing region and a second light passing region respectively corresponding to a distance from an optical axis of the beam of

incident light radiated from the light source, for receiving the beam of incident light radiated from the light source, converging the beam of incident light, which passes through the second light passing region and the transparent substrate of the second optical disk, at the information recording plane of the second optical disk, and converging the beam of incident light, which passes through the first light passing region and the transparent substrate of the first optical disk, at the information recording plane of the first optical disk; and]

a photo detector for detecting the light beam [of incident light], which is converged at [the] an information recording plane, serving as the information plane, of the first [optical disk] information medium having the thickness T1 and [the] at an information recording plane, serving as the information plane, of the second [optical disk] information medium having the thickness T2 by the compound objective lens and is reflected by the first [optical disk] information medium and the second [optical disk] information medium, respectively, to obtain first information recorded in the information recording plane of the first [optical disk] information medium and second information recorded in the information recording plane of the second [optical disk] information medium.

115 (Amended). An optical disk apparatus according to claim 159, comprising:

[a light source for radiating a beam of incident light;

a first optical disk having a transparent substrate of a first thickness T1 and an information recording plane;

a second optical disk having a transparent substrate of a second thickness T2 lower than the first thickness T1(T2<T1) and an information recording plane;

rotating means for rotating the first optical disk or the second optical disk;

an optical head apparatus, which comprises

an objective lens, partitioned into a plurality of light passing regions including a first light passing region and a second light passing region respectively corresponding to a distance from an optical axis of the beam of incident light radiated from the light source, for receiving the beam of incident light radiated from the light source, converging the beam of incident light, which passes through the second light passing region and the transparent substrate of the second optical disk, at the information recording plane of the second optical disk, and converging the beam of incident light, which passes through the first light passing region and the transparent substrate of the first optical disk, at the information recording plane of the first optical disk; and]

a photo detector for detecting the light beam [of incident light] which is converged at [the] an information recording plane, serving as the information plane, of the first [optical disk] information medium having the thickness T1 [or the] and at an information recording plane, serving as the information plane, of the second [optical disk] information plane having the thickness T2 by the compound objective lens and is reflected by the first [optical disk] information medium [or] and the second [optical disk] information medium, respectively;

focus control means for performing a first focus control of the optical head apparatus corresponding to the [first] thickness T1 of the [first optical disk] and a second focus control of the optical head apparatus corresponding to the [second] thickness T2 [of the second optical disk] according to the light beam [of incident light] detected by the photo detector;

tracking control means for performing a first tracking control of the optical head apparatus corresponding to the [first] thickness T1 [of the first optical disk] and a second tracking control of the optical head apparatus corresponding to the [second] thickness T2 [of the second optical disk] according to the light beam [of incident light] detected by the photo detector; and

information detecting means for judging according to the light beam [of incident light] detected by the photo detector [of the optical head apparatus], for which the first focus control and the second focus control [of the focus control means] and the first tracking control and the second tracking control [of the tracking control means] are performed, whether the light beam [of incident light] radiated from the light source is converged at the information recording plane of the first [optical disk] information medium having the thickness T1 or at the information recording plane of the second [optical disk] information medium having the thickness T2, reproducing first information recorded in the information recording plane of the first [optical disk] information medium from the light beam [of incident light] detected by the photo detector in cases where it is judged that the light beam [of incident light radiated from the light source] is converged at the information recording plane of the first [optical disk] information medium, and reproducing second information recorded in the information recording plane of the second [optical disk] information medium from the light beam [of incident light] detected by the photo detector in cases where it is judged that the light beam [of incident light radiated from the light source] is converged at the information recording plane of the second [optical disk] information medium[, and

moving means for moving the optical head apparatus].

122 (Amended). An optical disk apparatus according to claim 159, [comprising:

a laser light source for radiating a beam of incident light;

a first information medium having an information recording plane and a transparent substrate of a first thickness T1, a thickness of the first information medium being set to T1;

a second information medium having an information recording plane and a transparent substrate of a second thickness T2 smaller than the first

thickness T1(T2<T1), a thickness of the second information medium being set to T2;

rotating means for rotating the first information medium or the second information medium;

an optical head apparatus, which comprises

a light focusing optical system, in which an objective lens comprises:

a first lens region, corresponding to a numerical aperture NA1, for focusing the beam of incident light radiated from the laser light source on the information recording plane of the first information medium through the transparent substrate of the first information medium as a light spot for the purpose of reading out first information from the first information medium;

a second lens region, corresponding to a numerical aperture NA2 higher than the numerical aperture NA1(NA1<NA2), for focusing the beam of incident light radiated from the laser light source on the information recording plane of the second information medium through the transparent substrate of the second information medium as a light spot for the purpose of reading out second information from the second information medium; and]

in which the plurality of regions of the compound objective lens include:

a third [lens] region which corresponds to a numerical aperture NA3 satisfying [NA1≤NA3<NA2] a relationship of NA2≤NA3<NA1 and is unified with the [second lens] first region of the objective lens through a discontinuous plane[;],

the optical head apparatus further comprising:

a photo detector for detecting the light beam which is converged at an information recording plane, serving as the information plane, of the first information medium having the thickness T1 and at an information recording plane, serving as the information plane, of the second information medium having the thickness T2 by the compound objective lens and is reflected therefrom, respectively;

focus control means for performing a first focus control of the optical head apparatus corresponding to the [first] thickness T1 [of the first information medium] and a second focus control of the optical head apparatus corresponding to the [second] thickness T2 [of the second information medium] according to the light beam [of incident light] detected by the photo detector;

tracking control means for performing a first tracking control of the optical head apparatus corresponding to the [first] thickness T1 [of the first information medium] and a second tracking control of the optical head apparatus corresponding to the [second] thickness T2 [of the second information medium] according to the light beam [of incident light] detected by the photo detector; and

information detecting means for judging according to the light beam [of incident light] detected by the photo detector [of the optical head apparatus], for which the first focus control and the second focus control [of the focus control means] and the first tracking control and the second tracking control [of the tracking control means] are performed, whether the light beam [of incident light] radiated from the [light] optical source is converged at the information recording plane of the first or second information medium having either of the thickness T1 or T2 [or the information recording plane of the second information medium], reproducing [the] first information recorded in the information recording plane of the first information medium having the thickness T1 from the light beam [of incident light] detected by the photo detector in cases where it is judged that the light beam [of incident light radiated from the light source] is converged at the information recording plane of the first information medium, and reproducing [the] second information recorded in the information recording plane of the second information medium having the thickness T2 from the light beam [of incident light] detected by the photo detector in cases where it is judged that the light beam [of incident light

radiated from the light source] is converged at the information recording plane of the second information medium[; and

moving means for moving the optical head apparatus].

123 (Amended). An optical head apparatus according to claim 156, [comprising:

a light source for radiating a beam of incident light;

a first information medium having an information recording plane and a transparent substrate of a first thickness T1, a thickness of the first information medium being set to T1;

a second information medium having an information recording plane and a transparent substrate of a second thickness T2 smaller than the first thickness T1 (T2<T1), a thickness of the second information medium being set to T2;

a light focusing optical system for focusing the beam of incident light radiated from the light source on the information recording plane of the first information medium or the second information medium through the transparent substrate of the first thickness T1 or the transparent substrate of the second thickness T2, the light focusing optical system comprising]

in which the compound objective lens comprises

an optical device for minimizing an aberration occurring in the light beam [of incident light] in cases where the light beam [of incident light] passing through the optical device transmits through the [transparent substrate] first layer of the [second] first information medium having the thickness T1 and is focused on [the] an information recording plane, serving as the information plane, of the [second] first information medium, and

a ring-shaped band, placed on at least one surface of the optical device, for shifting a phase of the light beam [of incident light] passing through the optical device to reduce a wavefront aberration caused by a difference between

the thicknesses T1 and T2 of the first and second information media [thickness T1 of the first information medium and the thickness T2 of the second information medium] in cases where the light beam [of incident light] passing through the optical device transmits through the [transparent substrate] second layer of the [first] second information medium having the thickness T2 and is focused on [the] an information recording plane, serving as the information plane, of the [first] second information medium; [and]

the optical head apparatus further comprising

a photo detector for detecting the light beam [of incident light] which is converged on the information recording plane of the first information medium having the thickness T1 [or] and on the information recording plane of the second information medium having the thickness T2 by the [light focusing optical system] compound objective lens and is [reflect] reflected by the first information medium [or the] and second information medium to reproduce information recorded in the first [information medium or the] and second information [medium] media, respectively.

126 (Amended). An optical head apparatus according to claim 156, [comprising:

a light source for radiating a beam of incident light;

a first information medium having an information recording plane and a transparent substrate of a first thickness T1 a thickness of the first information medium being set to T1;

a second information medium having an information recording plane and a transparent substrate of a second thickness T2 smaller than the first thickness T1(T2<T1), a thickness of the second information medium being set to T2;

a light focusing optical system for receiving the beam of incident light radiated from the light source and focusing the beam of incident light on the

information recording plane of the first information medium or the second information medium through the transparent substrate of the first thickness T1 or the transparent substrate of the second thickness T2 to read out information recorded in the first information medium or the second information medium, the light focusing optical system comprising]

in which the compound objective lens comprises

a phase adjusting device, formed in a ring-band shape, for shifting a part of the light beam [of incident light] radiated from the [light] optical source, [and]

the compound [an] objective lens[,] having a light converging performance so as to converge the light beam [of incident light] radiated from the [light] optical source on [the] an information recording plane, serving as the information plane, of the [second] first information medium having the thickness T1 through the [transparent substrate of the second thickness T2] layer thereof at a diffraction limit, [for converging] to converge the light beam [of incident light], of which the part is shifted by the phase adjusting device, on [the] an information recording plane, serving as the information plane, of the [first] second information medium having the thickness T2 or the information recording plane of the [second] first information medium having the thickness T1 through the layer thereof [the transparent substrate of the first thickness T1 or the transparent substrate of the second thickness T2; and],

the optical head apparatus further comprises

a photo detector for detecting the light beam [of incident light], which is converged on the information recording plane of the first [information medium or the information recording plane of the] and second information [medium] media each having the thickness T1 or T2 by the [light focusing optical system] compound objective lens and is [reflect] reflected by the first [information medium or the] and second information [medium] media, respectively, to

reproduce information recorded in the first [information medium or the] and second information [medium] media, respectively.

128 (Amended). An optical disk apparatus according to claim 159, [comprising:

a light source for radiating a beam of incident light;

a first information medium, having an information recording plane and a transparent substrate of a first thickness T1, for recording first information on the information recording plane, a thickness of the first information medium being set to T1;

a second information medium, having an information recording plane and a transparent substrate of a second thickness T2 smaller than the first thickness T1 (T2<T1), for recording second information on the information recording plane, a thickness of the second information medium being set to T2;

rotating means for rotating the first information medium or the second information medium;]

in which [an] the optical head apparatus[, which] comprises

[a light focusing optical system for focusing the beam of incident light radiated from the light source on the information recording plane of the first information medium or the second information medium through the transparent substrate of the first thickness T1 or the transparent substrate of the second thickness T2, the light focusing optical system comprising]

an optical device for minimizing an aberration occurring in the light beam [of incident light] in cases where the light beam [of incident light] passing through the optical device transmits through the [transparent substrate] layer of the [second] first information medium having the thickness T1 and is focused on [the] an information recording plane, serving as the information plane, of the [second] first information medium, [and]

a ring-shaped band, placed on at least one surface of the optical device, for shifting a phase of the light beam [of incident light] passing through the optical device to reduce a wavefront aberration caused by a difference between the thicknesses T1 and T2 of [thickness T1 of the first information medium and the thickness T2 of] the first and second information [medium] media in cases where the light beam [of incident light] passing through the optical device transmits through the [transparent substrate] layer of the [first] second information medium having the thickness T2 and is focused on the information recording plane thereof [of the first information medium;], and

a photo detector for detecting the light beam, which is converged on the information recording planes of the first and second information media having the thicknesses T1 and T2 by the compound objective lens and is reflected by the first and second information media, respectively, to reproduce information recorded in the first and second information media, respectively;

focus control means for performing a first focus control of the optical head apparatus corresponding to the [first] thickness T1 of the first information medium and a second focus control of the optical head apparatus corresponding to the [second] thickness T2 of the second information medium according to the light beam [of incident light] detected by the photo detector;

tracking control mans for performing a first tracking control of the optical head apparatus corresponding to the [first] thickness T1 [of the first information medium] and a second tracking control of the optical head apparatus corresponding to the [second] thickness T2 [of the second information medium] according to the light beam [of incident light] detected by the photo detector; and

information detecting means for judging according to the light beam [of incident light] detected by the photo detector [of the optical head apparatus], for which the first focus control and the second focus control [of the focus control means] and the first tracking control and the second tracking control

[of the tracking control means] are performed, whether the light beam [of incident light] radiated from the [light] optical source is converged at [the] an information recording plane, serving as the information plane, of the first or second information medium having the thickness T1 or T2 [or the information recording plane of the second information medium], reproducing [the] first information recorded in the information recording plane of the first information medium having the thickness T1 from the light beam [of incident light] detected by the photo detector in cases where it is judged that the light beam [of incident light radiated from the light source] is converged at the information recording plane of the first information medium, and reproducing [the] second information recorded in the information recording plane of the second information medium having the thickness T2 from the light beam [of incident light] detected by the photo detector in cases where it is judged that the light beam [of incident light radiated from the light source] is converged at the information recording plane of the second information medium[; and

moving means for moving the optical head apparatus].

131 (Amended). An optical head apparatus according to claim 156, [comprising:

a laser light source for radiating a beam of incident light;

a first information medium having an information recording plane and a transparent substrate of a first thickness T1, a thickness of the first information medium being set to T1;

a second information medium having an information recording plane and a transparent substrate of a second thickness T2 smaller than the first thickness T1(T2<T1), a thickness of the second information medium being set to T2; and

a light focusing optical system, in which an objective lens comprises:

a first lens region, corresponding to a numerical aperture NA1, for focusing the beam of incident light radiated from the laser light source on the information recording plane of the first information medium through the transparent substrate of the first information medium as a light spot for the purpose of reading out first information from the first information medium;

a second lens region, corresponding to a numerical aperture NA2 higher than the numerical aperture NA1(NA1<NA2), for focusing the beam of incident light radiated from the laser light source on the information recording plane of the second information medium through the transparent substrate of the second information medium as a light spot for the purpose of reading out second information from the second information medium; and]

in which the plurality of regions of the compound objective lens include

a third [lens] region, corresponding to a numerical aperture NA4 equal to or lower than the numerical aperture NA2 (NA4≤NA2) [NA1(NA4≤NA1)], for changing the light beam [of incident light] radiated from the [laser light] optical source to converge the light beam [of incident light] on [the] an information recording plane, serving as the information plane, of the [first] second information medium having the thickness T2 through the [transparent substrate] layer thereof [of the first information medium having the first thickness T1]; and

a photo detector for detecting the beam light [of incident light], which is converged on the information recording plane of the first information medium having the thickness T1 [or the] and on an information recording plane, serving as the information plane, of the second information medium having the thickness T2 by the [light focusing optical system] compound objective lens and is [reflect] reflected by the first and second information [medium or the second information medium] media having the thickness T1 and T2, respectively, to reproduce [the] first information recorded in the first information medium [or

the] and second information recorded in the second information medium, respectively.

132 (Amended). An optical disk apparatus according to claim 159, [comprising:

a laser light source for radiating the beam of incident light having a particular wavelength;

a first information medium, having an information recording plane and a transparent substrate of a first thickness T1, for recording first information on the information recording plane, a thickness of the first information medium being set to T1;

a second information medium, having an information recording plane and a transparent substrate of a second thickness T2 smaller than the first thickness T1(T2<T1), for recording second information on the information recording plane, a thickness of the second information medium being set to T2;

rotating means for rotating the first information medium or the second information medium;

an optical head apparatus, which comprises

a light focusing optical system, in which an objective lens comprises:

a first lens region, corresponding to a numerical aperture NA1, for focusing the beam of incident light radiated from the laser light source on the information recording plane of the first information medium through the transparent substrate of the first information medium as a light spot for the purpose of reading out first information from the first information medium;

a second lens region, corresponding to a numerical aperture NA2 higher than the numerical aperture NA1(NA1<NA2), for focusing the beam of incident light radiated from the laser light source on the information recording plane of the second information medium through the transparent substrate of the

second information medium as a light spot for the purpose of reading out second information from the second information medium; and]

in which the plurality of regions of the compound objective lens include

a third [lens] region, corresponding to a numerical aperture NA4 equal to or lower than the numerical aperture NA2 (NA4≤NA2) [NA1 (NA4≤NA1)], for changing the light beam [of incident light] radiated from the [laser light] optical source to converge the light beam [of incident light] on [the] an information recording plane, serving as the information plane, of the [first] second information medium having the thickness T2 through the [transparent substrate] layer thereof [of the first information medium having the first thickness T1]; [and]

a photo detector for detecting the light beam, which is converged on the information recording plane of the first and second information media each having the thickness T1 or T2 by the compound objective lens and is reflected by the first and second information media, respectively, to reproduce information recorded in the first and second information media, respectively;

focus control means for performing a first focus control of the optical head apparatus corresponding to the [first] thickness T1 of the first information medium and a second focus control of the optical head apparatus corresponding to the [second] thickness T2 of the second information medium according to the light beam [of incident light] detected by the photo detector;

tracking control means for performing a first tacking control of the optical head apparatus corresponding to the [first] thickness T1 of the first information medium and a second tracking control of the optical head apparatus corresponding to the [second] thickness T2 of the second information medium according to the light beam [of incident light] detected by the photo detector; and

information detecting means for judging according to the light beam [of incident light] detected by the photo detector [of the optical head apparatus],

for which the first focus control and the second focus control [of the focus control means] and the first tracking control and the second tracking control [of the tracking control means] are performed, whether the light beam [of incident light] radiated from the [light] optical source is converged at [the] an information recording plane, serving as the information plane, of the first information medium having the thickness T1 or [the] at an information recording plane, serving as the information plane, of the second information medium having the thickness T2, reproducing [the] first information recorded in the information recording plane of the first information medium from the light beam [of incident light] detected by the photo detector in cases where it is judged that the light beam [of incident light radiated from the light source] is converged at the information recording plane of the first information medium, and reproducing [the] second information recorded in the information recording plane of the second information medium from the light beam [of incident light] detected by the photo detector in cases where it is judged that the light beam [of incident light radiated from the light source] is converged at the information recording plane of the second information medium[; and

moving means for moving the optical head apparatus].

## REMARKS

Applicants' amendment, filed September 23, 2002, was not entered after Final Action. Applicants file herewith a Request for Continued Examination under 37 CFR 1.114, and provide an amendment herein which cancels a number of claims previously pending in the application (specifically claims 86-87, 89-91, 94-112, 114, 116-121, 124-125, 127 and 129-130), leaves unaltered claims 1-85, amends remaining claims 88, 92-93, 113, 115, 122-123, 126, 128 and 131-132, and presents a number of new claims (specifically, new claims 133-159).

Thus, upon entry of the present amendment, there remain only claims 1-85, 88, 92, 93, 113, 115, 122, 123, 126, 128, 131and 132, and newly submitted claims 133-159 (hereinafter referenced, for brevity, as "claims 88-159".)

The following summarizes the subject matter of the claims pending in this Broadening Reissue application.

Claims 1-18 are the issued in the patent to be reissued.

Claims 19-24 are dependent on the issued claims.

Claim 25 includes all features of the compound objective lens of original claim issued claim 1, with the exception of the preamble, and omits an alternative recitation therein, thus resulting in a narrowed scope. Further, claim 25 adds a light source to form the recited image optical system. The claim thus provides a narrower scope than issued claim 1. Claims 26-43 depend from claim 25.

Claim 44 includes all features of the compound objective lens of issued claim 1, with the exception of the preamble, and omits an alternative recitation thus narrowing its scope. Further, the claim adds a photodetector and a light source to form the recited optical head apparatus. The claim thus provides a narrower scope than issued claim 1. Claims 45-85 depend from claim 44.

The remaining claims 88-159 include three new independent claims (133, 154 and 157) which are broader than the issued claims, and claims dependent thereon. Previously

pending claims 88, 92, 93, 113, 115, 122, 123, 126, 128, 131and 132 have all been amended to depend from the three new independent claims.

In order to facilitate the Examiner's review of the amended claims, a "marked up version" thereof is included, deviating from the manner of making amendments in reissue applications and, instead, presenting these claims in a form clearly showing the changes therein from the previously pending versions thereof. Thus, the claims are presented in a standard amendment form, utilizing brackets to show deletions and underlining to show additions.

Unity of Invention

During prior prosecution, it was asserted that no linking claim had been presented to suggest the inventions claimed in the patent have unity of invention with the claims newly presented in reissue. It is respectfully submitted that, as demonstrated by the following remarks, the present amendment preserves unity of invention by virtue of the claims newly provided and amended herein.

More particularly, the amendment clarifies that the invention is directed to a compound objective lens (as recited in issued claim 1 and new claim 133), as well as to an optical head apparatus (recited in previously filed claim 44 and in new claim 154) or an image optical system (recited in previously filed claim 25) which includes the compound objective lens, and to an optical disk apparatus (recited in new claim 157) in which the optical head apparatus is mounted. The compound objective lens recited in claim 133 therefore links all the apparatus claims to one another.

Moreover, as is apparent from the invention as recited both in issued claim 14 and in new claim 133, the inventive lens has different (unequal) numerical apertures (NA1 and NA2) for the light converged thereby to different focal points which are at different distances (T1 and T2) from the surfaces of two layers.

Fundamentally, the compound objective lens of the invention includes a plurality of regions which are optimized so that the lens has a plurality of numerical apertures for at least two kinds of layers, of thicknesses T1 and T2.

However, upon reviewing the issued patent, the patentees noticed that they had failed to submit claims directed to the broader, more fundamental and significant features of the invention as noted above, and that, instead, the feature was presented in claim 14 along with other (unnecessary) limitations.

The patentees thus concluded that the issued claims should have been directed to a more fundamental feature of the invention, which is based on the relationships of the numerical apertures NA1 and NA2 of the compound objective lens and the positions of at least two kinds of focal points to be focused. The positions of the focal points, in practical applications, may relate to thicknesses T1 and T2 of two kinds of optical disks, for example.

The significance of this aspect of the invention may be appreciated from the following.

One conventional prior art approach to providing a high-density memory capacity of an optical disk was to enlarge a numerical aperture of an imaging optical system. However, the degree of chroma aberration occurring in the imaging optical system is increased if the numerical aperture is increased, because the tilt of an optical axis in the system from the normal axis is increased. As described by the patentees at col. 3, lines 31-50 of the reissue application, in order to avoid this problem, it is effective to make the optical disk thinner. On the contrary, if an optical disk is kept at a larger thickness, such as commercially available CD's, the numerical aperture should be made smaller.

The present invention thus provides, as one aspect thereof, an optical lens capable of producing two or more focal points at different depths, so that the conventional optical disk and the high-density-memory-capacity optical disk can be handled by the same optical lens.

To realize such an object, it is required to simultaneously control the numerical apertures (NA1 and NA2) and the thicknesses (distances; T1 and T2) of optical disks. Conventionally, prior to the patentees' disclosure, it had not been known that different

types of numerical apertures NA1 and NA2 were (or should be) adapted to one optical lens so as to make focusing of plural focal points possible.

Accordingly, as recited in the newly submitted linking claim 133, the most fundamental and broadened scope of the present invention relies on the limitations of "NA1 is not equal to NA2" and "T1 is not equal to T2."

Since the issued patent set forth this recitation only in dependent claim 14, which incorporated each of the limitations of its parent claim 1, the patentees concluded that they had, indeed, erred by claiming less than they had a right to claim and thus filed the present reissue application.

It is therefore submitted that, contrary to assertions set forth in Office Actions during prior prosecution, the oath submitted upon filing the application properly identified their belief that the original patent is wholly or partly inoperative or invalid, and properly set forth a statutory basis for the reissue as "by reason of the patentee claiming more or less than he had the right to claim in the patent".

It is also submitted that the oath noted an additional error, in that at least one claim which depended from a subsequently issued claim had been cancelled during prosecution.

It goes without saying that a claim which depended from a claim that subsequently issued would also have issued, and that canceling such a claim results in a patent which may be partly inoperative in failing to include such a claim therein.

In the present instance, claims 121, 124-129, 141, 145-147, 149 of the original application which matured into the issued patent, and which were dependent on claim 120 (ultimately issuing as claim 1 of the subject patent), were erroneously cancelled in a paper filed January 10, 1997. It is noted that the claims were not cancelled to obtain allowance of the application.

However, if necessary or required for simplification of prosecution, the patentees will provide a substitute oath, which omits reference to this "additional error".

Since all the newly added claims in the reissue application are based on the same novel technical feature of the compound objective lens, and since all set forth features

included in an issued claim in a broadened fashion as hereinabove described, applicants respectfully submit that contrary to the assertions in the previous Official Actions, the oath submitted with the application is proper, and that unity of the invention has been demonstrated and is properly maintained by the claims submitted herein.

Accordingly, withdrawal and reconsideration of the rejections previously set forth is in order and the same is respectfully solicited.

Statement of Support for New Claims

It is respectfully submitted that support for newly submitted claims 133-159 is found in the specification, as follows.

The following table illustrates support for the new claims, identifying various supporting disclosure whether in the specification, in the drawing figures, or by reference to the various illustrative embodiments disclosed in the specification.

| ***Claims*** | ***Support*** |
|---|---|
| 88 and 92 | described in the sixth embodiment starting from col. 41, line 11 and in the twentieth embodiment from col. 75, line 39; |
| 93 | described in the twenty-first embodiment starting from. col. 77, line 7; |
| 113 | described in the sixth embodiment starting from col. 41, line 11; |
| 115 | described in the twentieth embodiment from col. 75, line 39; |
| 122 | described in the third embodiment starting from col. 35, line 23, in the sixth embodiment starting from col. 41, line 11 and in the eighth embodiment from col. 49, line 12; |
| 123, 126 & 128 | described in the third embodiment starting from col. 35, line 23 and in the sixth embodiment starting from col. 41, line 11 ("optical device for minimizing an aberration" and "ring-shaped band" are changed in terminology to the hologram lens, but are the same as the hologram lens described in the first embodiment); and |
| 131 and 132 | described in the third embodiment starting from col, 35, line 23 and in the sixth embodiment starting from col. 41, line 11. |
| 133 | together with Figs. 4A, 4B and 5, descibed in the first embodiment from col. 28, line 40 to col. 31, line 26; |
| 134 | together with Figs. 4A and 4B, described in col. 26, lines 52-54 and col. 27, lines 30-51; |
| 135 | col. 26, lines 42-48, together with Fig. 5; |
| 136 | described together with Fig. 5; |
| 137 | described in the second embodiment from col. 31, line 27 to col. 34. line 57; |
| 138 | described, together with Figs.16A, 16B and 17, in the third embodiment starting from col. 35, line 23, particularly, in col. 35, lines 62-64; |
| 139 | described, together with Fig. 20, in the fifth embodiment from col. 40, line 57; |

| | |
|---|---|
| 140 | described, together with Fig. 19A, in the fourth embodiment from col. 40, line 23; |
| 141 | described in col. 25, lines 65-67; |
| 142 | described in col. 25, lines 48-49; |
| 143 | described in col. 25, line 67 to col. 26, line 3; |
| 144 and 145 | described in col. 36, lines 25-29, together with Figs. 16A and 16B; |
| 146 and 147 | described, together with Figs. 4A, 4B and 5, in col. 26, lines 42-48 and col. 27, lines 35-43; |
| 148 | described in the first embodiment; |
| 149 | described in col. 35, lines 62-64; |
| 150 | described in col. 26, lines 56-62; |
| 151 | described in col. 26, lines 63-67; |
| 1652and 153 | described in col. 26, line 56 and Fig. 6; |
| 154 and 155 | described in the sixth embodiment starting from col. 41, line 11, together with Fig. 21; |
| 156 | described, together with Figs. 4A and 4B, in col. 27, lines 30-51; |
| 157 | described in the twentieth embodiment from col. 75, line 39, together with Fig. 55; |
| 158 | described in the eighth embodiment from col. 49, line 12, which uses Fig. 35 A; |
| 159 | described, together with Figs. 4A and 4B, in col. 27, lines 30-51; |

Having demonstrated support for the claims, it is further respectfully submitted that upon examination it will be seen that the pending claims are patentable over the prior art and, accordingly, that the Reissue Application should be granted and that the subject patent be reissued forthwith.

It is respectfully submitted that examination on the merits, which has been delayed, is in order and such examination is earnestly requested.

Respectfully submitted,

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